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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/408,921 | 09/30/1999 | ANTHONY J. RICCI | LAMIP118 | 4619 |

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EXAMINER

BUEKER, RICHARD R

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1763

DATE MAILED: 09/12/2002

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/408,921

Applicant(s)

RICCI ET AL.

Examiner

Richard Bueker

Art Unit

1763

paper no. 14

9-12-02

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 1763

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 defines the GDP as including "a material whose products from reacting with the process chemistry used in the semiconductor fabrication process are gaseous". Since "the process chemistry" is undefined, the composition of the GDP is also undefined, and therefore indefinite.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1763

Claims 1-14 and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Maydan (5,746,875). Maydan discloses a GDP for use in a plasma etch apparatus, wherein the GDP is constructed of a ceramic of the type recited in present claim 10. The GDP is treated to remove surface defects, in order to eliminate particle defects when the GDP is used for wafer processing. Maydan discloses (col. 5, line 58 to col. 6, line 19) that polishing procedures achieve a defect free smooth surface on each piece. Regarding the step of heating recited in claims 3 and 12, it is noted that these claims are product-by-process claims and will be treated in the manner described in MPEP 2113. As stated therein, the use of 35 U.S.C. 102/103 rejections for product-by-process claims has been approved by the courts. "When the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable", *In re Brown*, 173 USPQ 685. In the present case the GDP of Maydan appears to be identical to the GDP as recited in the claims. Regarding claim 7, it is noted that Maydan's Figs. 18 and 20, for example, show a part (330' for example) having a gas distribution groove in its back face, while Maydan indicates at col. 5, line 64, that his parts are machined, so it is inherent or at least obvious that the groove in part 330' of Fig. 18 can be formed by machining.

Claims 1-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan (5,746,875) taken in view of Gupta (6,083,451). Gupta (abstract)

Art Unit: 1763

discloses a method of forming ceramic parts for use in a semiconductor fabrication apparatus, wherein the ceramic part is heat treated at a temperature of between 1400° C and 1700° C, for a time of between 8 to 12 hours to ^{form} for a GDP part that has reduced emission of particles when exposed to a fluorine plasma etch process. It would have been obvious to one skilled in the art to use the heat treatment fabrication process of Gupta to produce the GDP parts of Maydan, because Maydan desires to eliminate the production of particulates from his GDP.

Claims 1-6 and 8 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shang. Shang discloses a GDP (see col. 6, lines 5-17 and 48-58, and col. 7, lines 1-23 and 40) for use in a plasma etch apparatus, wherein the GDP is treated to remove surface defects, in order to eliminate particle defects when the GDP is used for wafer processing. Shang discloses a step of heating the GDP to 100° C (col. 6, line 50) or 350° C (col. 6., line 58), which explicitly meets the limitations of claim 3.

Claims 1-14 and 18 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wicker I (5,993,594). Wicker discloses a GDP made by hot pressing silicon nitride at a temperature above 1500° C (col. 7, lines 34-38). Wicker teaches (col. 3, lines 33-42) that his GDP results in much reduced particulate generation and much lower rate of chemical reaction with process gases. In view of the product-by-process nature of applicant's claims, the GDP of Wicker is prima facie not distinguishable from the presently claimed GDP.

Art Unit: 1763

Claims 1-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicker I (5,993,594) or Wicker II (5,863,376) taken in view of Maydan (5,746,875), Chen (5,824,605) and optionally in further view of applicants' description of the prior art. Wicker I and II each discloses ceramic GDPs, which are sintered at high temperature during fabrication. Maydan teaches that it is desirable to polish a ceramic GDP to remove surface defects and thus reduce contamination due to erosion or corrosion during wafer processing. It would have been obvious to one skilled in the art to polish the ceramic GDP of Wicker I or II, in view of Maydan's teaching that polishing a ceramic GDP will reduce contamination during wafer processing. Regarding the recited machined surface, it is noted that Chen (col. 8, lines 13-14) teaches that a machining step of shaping a GDP can be done prior to the heat treatment step, and it would have been prima facie obvious to shape the GDP of Wicker I or Wicker II by machining prior to the heat treatment step, because Chen teaches that a GDP can successfully be shaped prior to heat treatment. Furthermore, applicants' description of the prior art discloses that it was a conventional practice in the prior art to season a GDP in a reactor for 10 hours (see last paragraph of page 2 of applicants' specification). It thus would have been obvious to one skilled in the art to season a GDP such as that of Wicker I or II or Chen or even Maydan in order to further reduce particulates if so desired. At page 6, lines 18-20, applicants indicate that a seasoned GDP does not contain micro-defects, and thus meets the presently recited limitation of "no micro-defects about 50 micrometers or greater". Applicants' product-by-process as presently written do not distinguish over such a seasoned prior art GDP in any discernable way.

Art Unit: 1763

It is noted that seasoning by operating the processing chamber for 10 hours is a high temperature process, which inherently heats the GDP (see col. 6, lines 30-31 of Wicker II for example), at least to the extent recited in claim 3.

Claims 1-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (5,824,605) taken in view of Maydan (5,746,875) and Gupta (6,083,451). Chen discloses a GDP constructed of, for example aluminum oxide, formed by heat treating (sintering). Chen teaches that the GDP can be shaped by machining prior to the heat treating step. Chen teaches that his GDP has reduced particle defects. Maydan teaches that particle defects can also be eliminated by polishing a ceramic GDP. It would have been obvious to polish the GDP of Chen to further eliminate particle defects, in view of the teachings of Maydan. Gupta teaches that aluminum oxide parts can be formed with reduced particle defects by heat treating (sintering) within the time and temperature ranges recited in applicants' claim 12. It would have been obvious to one skilled in the art to perform the heat treatment of Chen within the time and temperature ranges taught by Gupta, because Gupta teaches that these heat treatment conditions can successfully result in an aluminum oxide part of reduced particle defects. The resulting GDP of Chen after treatment in such manner would be expected to have defects reduced to the extent required by the present product by process claims.

Applicants have argued that Maydan does not anticipate or make obvious the claims because Maydan polishes separate pieces of the GDP prior to assembly of the GDP. It is noted, however, that none of claims 1-11 contain any limitation that would

Art Unit: 1763

preclude a GDP formed of separate parts as in Maydan. Also, regarding the claim 12 limitation of "wherein said gas distribution plate is pretreated by heating" does not preclude separate parts of the GDP being pretreated as separate parts. Also, since claim 12 is a product by process claim, it can be anticipated by a prior art product such as Maydan's GDP, even if the prior art GDP were produced by a different method. See *In re Brown*, 173 USPQ 685 discussed above.

Applicants have also argued that Maydan does not teach a particular dimension of defect that is eliminated by machining or polishing. It is noted, however, that since Maydan eliminates the defects, they are not present in a size greater than that recited by applicants.

Regarding Shang, applicants have argued that Shang teaches about contamination where fluorine is not used in the process. It is noted, however, that the present claims are not limited with respect to what process chemistry is used.

Applicants' other arguments have been considered but are not persuasive.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (703) 308-1895. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Art Unit: 1763

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Richard Bueker
Richard Bueker
Primary Examiner
Art Unit 1763

September 9, 2002